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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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			EXAMINER	
			TRAN, BINH X	
			ART UNIT	PAPER NUMBER
			1765	

DATE MAILED: 01/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/963,966

Applicant(s)

SATO ET AL.

Examiner

Binh X Tran

Art Unit

1765

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) 13-35 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 7-10 is/are rejected.
- 7) ☒ Claim(s) 4-6, 11 and 12 is/are objected to.
- 8) ☒ Claim(s) 1-35 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Applicant's election of Group I (claims 1-12) in Paper filed on 10-14-2003 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).
2. Claims 13-35 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in Paper filed on 10-14-2003.

Specification

3. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-3 are rejected under 35 U.S.C. 102(b) as being anticipated by Watts et al. (US 6,096,652).

Watts discloses a polishing method of an object having a substrate, an insulating film (310) formed in the substrate, interconnection grooves (300) formed in the insulation film (310) and a conductive layer (330) formed inside and outside of the interconnection grooves. The method comprises the steps of:

supplying a processing solution (a component of medium 345) over the surface to be polished (330) at least substantially parallel to the surface and removing the polishing film (330) formed outside of the interconnection grooves by a shear stress due to the processing solution preferentially from projecting portions of the film to the flatten the surface (Fig 4, col. 4 lines 35-60).

Respect to claim 2, Watts teaches the film (330) comprises a copper film. Respect to claim 3, Watts discloses the substrate has contact holes (311) communicating with the interconnection grooves (300) formed in the insulating layer (310) and having the interconnection layer (330) formed buried inside the contact hole (311).

6. Claims 7-8 are rejected under 35 U.S.C. 102(b) as being anticipated by Uzoh (US 6,066,030).

Uzoh discloses a method for electropolishing a substrate having the steps of:

supplying an electrolytic solution at least between the substrate surface (3) and a cathode member (5) arranged facing and substantially parallel to the substrate surface while supplying a voltage to the cathode member (5) and the substrate (3) as the anode member and polishing preferentially projecting portions of the substrate by shear stress to the electrolytic solution to flatten the substrate (col. 3-4).

Respect to claim 8, Uzoh discloses the substrate comprise a copper film (col. 5 lines 15-20).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Uzoh in view of Watts.

Respect to claim 9, Uzoh fails to explicitly disclose that the substrate has an insulating film formed thereon, interconnection grooves formed on the insulating film, an interconnection layer buried inside the interconnection grooves, and formed over the entire surface outside the interconnection groove. Uzoh also fails to explicitly disclose the step of removing the interconnection layer formed outside the interconnection

grooves to flatten the surface. However, Uzoh clearly discloses that the substrate has a damascene type structure and the step of removing the interconnection layer (i.e. copper layer) to flatten the surface. Watts discloses the damascene type structure comprises an insulating film (310) formed on the substrate, interconnection grooves (300) formed on the insulating film (310), an interconnection layer (330) buried inside the interconnection grooves, and formed over the entire surface outside the interconnection groove. Watts further disclose the step of removing the interconnection layer formed outside the interconnection grooves to flatten the surface. It would have been obvious to one having ordinary skill in the art, at the time of invention, to modify Uzoh, by having the damascene type structure as discloses by Watts because equivalent and substitution of one for the other would produce an expected result.

Respect to claim 10, Watts discloses the substrate has contact holes (311) communicating with the interconnection grooves (300) formed in the insulating layer (310) and having the interconnection layer (330) formed buried inside the contact hole (311).

Allowable Subject Matter

10. Claims 4-6, 11-12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

11. The following is a statement of reasons for the indication of allowable subject matter: The cited prior arts fail to disclose or suggest the step of repeated forming a chelate film on the surface parts of the film exposed at the projecting portions and

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removing by polishing preferentially the projecting portions of the chelate film to flatten the film.

Conclusion

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Binh X Tran whose telephone number is 571-272-1469. The examiner can normally be reached on Monday-Thursday and every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine G Norton can be reached on 571-272-1465. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9310.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Binh X. Tran

SUPERVISOR
NADINE G. NORTON
PRIMARY EXAMINER

